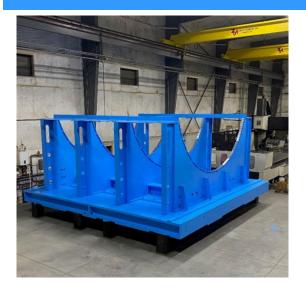
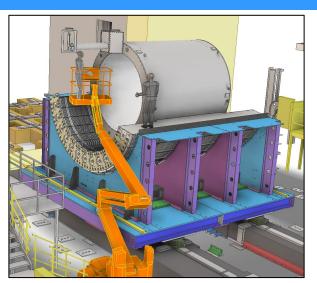
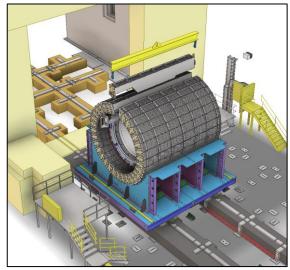


sPHENIX PMG March 18, 2021 sPHENIX Construction Update

Russ Feder for the sPHENIX team

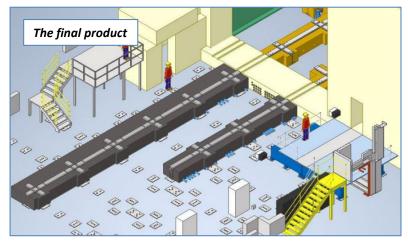






Assembly Hall Track Reinforcement





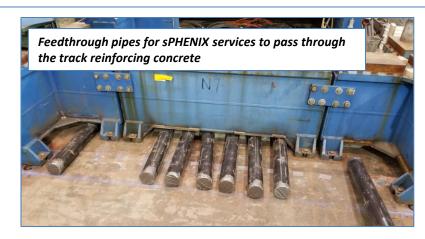
NON-SHRINK GROUT (SEE NOTE 11) 3-87 BARS 788 (TVP) SEE NOTE 5 TOS. GROUT SHALL NOT EXTEND BEYOND THIS ELEVATION THIS ELEVATION THE SELEVATION THE SELEVATION THE SELEVATION THE SELEVATION TO SECOND SHALL NOT EXTEND BEYOND THE SELEVATION THE SELEVATION TO SECOND SHALL NOT EXTEND BEYOND THE SELEVATION TO PLATE (EXISTING) TO SEE NOTE 10) THE SELEVATION TO PLATE (EXISTING) TO SEE NOTE 10) THE SELEVATION TO PLATE (EXISTING) TO SEE NOTE 10) THE SELEVATION TO PLATE (EXISTING) TO SEE NOTE 10) THE SELEVATION TO PLATE (EXISTING) TO SEE NOTE 10) THE SELEVATION TO PLATE (EXISTING) TO SEE NOTE 10) THE SELEVATION TO PLATE (EXISTING) TO SEE NOTE 10) THE SELEVATION TO PLATE (EXISTING) TO SEE NOTE 10) THE SELEVATION TO PLATE (EXISTING) TO SEE NOTE 10) THE SELEVATION TO PLATE (EXISTING) TO SEE NOTE 10) THE SELEVATION TO PLATE (EXISTING) TO SEE NOTE 10) THE SELEVATION TO PLATE (EXISTING) TO SEE NOTE 10) THE SELEVATION TO PLATE (EXISTING) TO SEE NOTE 10) THE SELEVATION TO PLATE (EXISTING) TO SEE NOTE 10) THE SELEVATION TO PLATE (EXISTING) TO SEE NOTE 10) THE SELEVATION TO PLATE (EXISTING) TO SEE NOTE 10) THE SELEVATION TO PLATE (EXISTING) TO SEE NOTE 10) TO SEE NOTE 10 TO SEE NOTE 10) TO SEE NOTE 10) TO SEE NOTE 10) TO SEE NOTE 10 TO SEE NOTE 10) TO SEE NOTE 10)

Work Completed:

- Drilled 230 5/8-inch diameter holes in the AH floor for rebar dowels.
 Required special attention to buried electrical hazards and close coordination with RHIC Ops to schedule an 8-hour maintenance period and temporary shutdown of circuit that provides power to tunnel.
- Installed and anchored formwork and 35 -4 inch feedthrough in preparation for under-track grout placement.

Work Scheduled Next

- Complete formwork and grout directly under tracks
- Strip forms and prepare for welding of support angles (approx. 10-12 days to complete)
- Continue to submit details and cut sheets in preparation for the installation of reinforcing steel cages longitudinal bars and stirrups.



sPHENIX construction starts in May with the Cradle-Base installation



(1) Cradle-Base: Lifting, Ergonomics and Confined Space (?)

Cradle-Base at Streck's

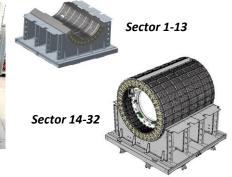
Cradle-Base CAD choreography





(2) Outer HCAL: Lifting, Ergonomics, Elevated Work



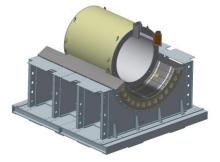


Rotation fixture on floor

(3) <u>Cryostat</u>: Lifting, Ergonomics, Elevated Work



Moving Cryostat in bldg. 912

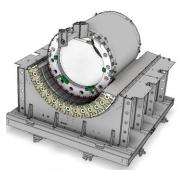


Cryostat sitting in oHCAL 1-13 cradle

(4) Large Support Rings: Lifting, Ergonomics, Elevated Work





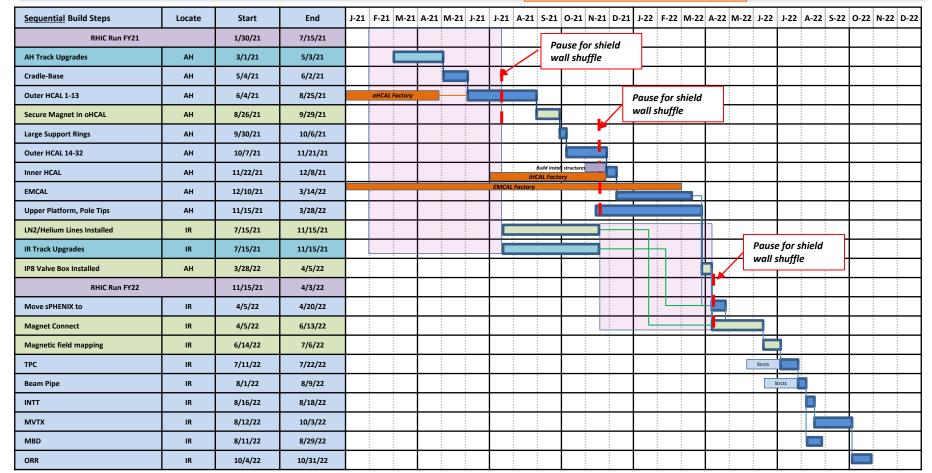


View of South LSR

sPHENIX Installation Schedule







Status by order of installation → AH construction through the end of 21'

SPHE	N	ΙX	
	4		

Component	Need Date(s)	Status	
AH Track Reinforcement Work	Underway	Completed in early May	
Cradle-Base	Early May, 21'	Complete. In storage at Streck's. Delivered to BNL as needed in May.	
oHCAL sectors and components	Early June, 21'	Sectors 1-13 complete. Final sectors on stands for integration of electronics. Sectors 14-32 installed after LSRs installed.	
Magnet supports	Late August, 21'	Procurement start 3/22. Not a concern <u>if award in April</u> . Many shops can handle these small parts.	
Babar Magnet		In-Hand. Transport from bldg. 912 to 1008 when needed	
Large Support Rings (LSRs)	Late Sept, 21'	Procurement started 3/15 → need to award contract for LSRs ASAP. Large parts, 7075-T6 aluminum, precise machining	

Preparing for sPHENIX detector construction



- sPHENIX detector construction starts in early May once the assembly hall track upgrade work is complete.
 The cradle-base components are being stored at Streck's and will be trucked down to BNL upon request and delivered to 1008.
- 2. The first of many ESRC reviews was held on 3/15 (https://indico.bnl.gov/event/10745/). Installation plans and safety assessments of the first four construction steps were presented to a panel of safety, rigging and engineering experts.
- 3. Detailed resource planning is underway with CA-D. 3/17 meeting to kick things off with the agreement to start providing a 2-week look-ahead for rigging, survey and trades support.
- 4. We are preparing for the 2.X project review April 7th. This is a healthy process because we are combing through the infrastructure and construction plans, finding things that need improvement, and transitioning from a design mind-set to a build-it mindset.
- 5. Design for all of the components to be installed through November is complete. Procurement is complete for the Cradle-Base, Magnet and oHCAL sectors. Procurement of the magnet supports and large support rings (LSRs) started this week. The magnet supports are needed at the end of August and the LSRs at the end of September. The LSR procurement needs to be prioritized and managed closely to stay on schedule.



Back Up Slides

Cradle-Base installation starts in May

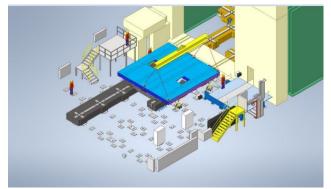


The cradle-base is complete and in storage at Streck's. The first base half assembly will be driven down to BNL as the 1008 AH track reinforcement work finishes.



The installation of the 36.4 ton cradle-base halves has been "practiced" virtually in details CAD choreography models. This has helped to identify needed installation tools and in identifying hazards and mitigation strategies.





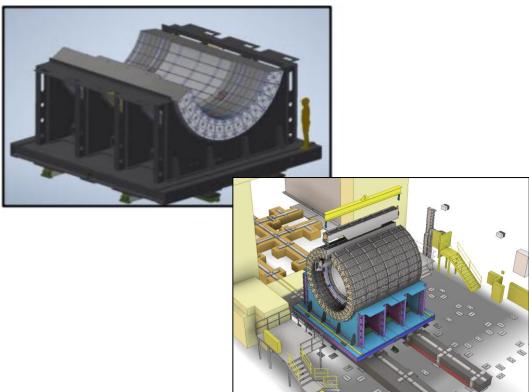
Outer HCAL build in two parts; 1-13 and 14-32



The sPHENIX technicians and CA-D rigging team have practiced building sets of three sectors in vertical and horizontal stacks over the past year.



Sectors 1-13 are first installed forming this cradle. Then the magnet and LSRs need to be installed before completing the oHCAL barrel with the much-anticipated insertion of sector 32.

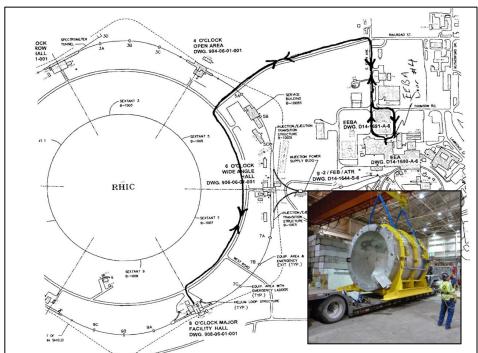


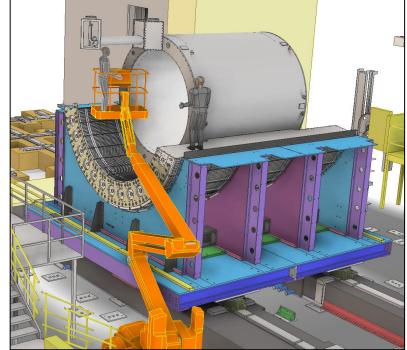
Magnet transport from 912 and install in late August



The magnet will be slowly driven on an air-ride flatbed from AGS building 912 to the 1008 AH. The cryostat is mounted in a transportation cage and has other transport protection features.

Once in place there will be electrical and vacuum leak tests to ensure the magnet is healthy. This will be the last opportunity to access the cryostat before buried in other sPHENIX structures.





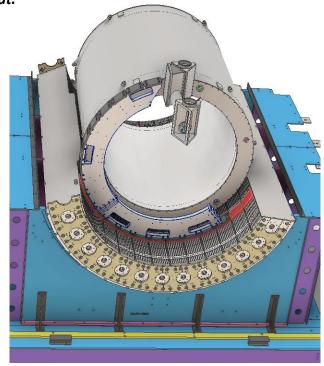
The Large Support Rings are needed by late September



There are two LSRs; one north and one south. The LSRs support the oHCAL upper barrel and also support the iHCAL and EMCAL barrels. Each LSR is fabricated from 4" thick 7075-T6 aluminum alloy.

Hydraulic support strut Magnet support access windows oHCAL interface pads 6X Magnet z-axis supports iHCAL supports

The LSRs will be built in place on the oHCAL 1-13 cradle using the 10-ton crane in the 1008 AH. This is a view of the partially built south-end LSR. The LSRs interface closely with the magnet cryostat.



Opportunities in AH phase to complete some steps in parallel



